

TALKING ABOUT TREES

A Glossary of Terms
Used by Foresters

Prepared By

The Indiana Department of Natural Resources

Division of Forestry

The following is a glossary of terms defining various types of foresters working in Indiana and what their work involves. Common technical terms and acronyms used in forestry are also defined. While not intended to be a complete dictionary of terms, this glossary should provide the non-forester a basic working knowledge of the "forester's language."

PART I - TYPES OF FORESTERS IN INDIANA

Consultant Forester — a professional forester who works for private or public woodland owners for a fee.

District Forester — a professional forester employed by the Indiana Department of Natural Resources, Division of Forestry to assist private woodland owners and wood using industries.

Extension Forester — a professional forester employed by the Purdue Cooperative Extension Service to provide information and promote forestry education.

District Ranger — a professional forester employed by the U.S. Forest Service responsible for a district within a national forest.

Forest Supervisor — usually a professional forester employed by the U.S. Forest Service responsible for a national forest.

Industrial Forester — a professional forester employed by a wood using industry for procurement of timber, timber land management, improved utilization of materials in manufacturing or other technical responsibilities.

Logger — a person engaged in the business of cutting standing timber and delivering the logs to be processed.

Professional Forester — a graduate of an accredited four or five year curriculum in the management of forest resources.

State Forest Property Manager — usually a professional forester employed by the Indiana Department of Natural Resources, Division of Forestry responsible for a state forest.

Timber Buyer — a person engaged in the business of buying timber from timber growers for processing into wood products.

Timber Specialist — a graduate of an accredited four or five year curriculum in the management of forest resources who is employed by the Indiana Department of Natural Resources, Division of Forestry to conduct timber management activities in a state forest.

PART II — COMMON CONFUSING ACRONYMS

A.C.P. — Agricultural Conservation Program is a federal cost-share program administered by the A.S.C.S. Its purpose is to encourage conservation practices on privately owned farms and woodlands by sharing a part of the cost of such practices with the landowners. Forest related practices include tree planting, timber stand improvement and erosion control practices on forest roads and trails.

A.S.C.S. — Agricultural Stabilization and Conservation Service which is an agency of the U.S. Department of Agriculture and is responsible for the administration of most of the federal government's farm programs dealing with price supports and cost sharing.

C.F.M. — Cooperative Forest Management Act which became federal law in 1950. It gave authority to the U.S. Forest Service to work with private landowners through state agencies. C.F.M. provides cost-share assistance for the management of private forestland. In Indiana, district foresters are responsible for administering C.F.M. activities and assisting private landowners.

DBHob — Diameter at breast height outside the bark. This measurement is taken at 4½ feet above ground level and is expressed in inches. This acronym is usually expressed as DBH.

Dib — Diameter of the small end of a log inside the bark. It is calculated by measuring the average diameter inside the bark at the small end of the log. By calculating the Dib to the nearest inch and the log length to the nearest foot, one can easily determine the volume of a log from a log scale table. (See Doyle Rule in Part III of this glossary).

FmHA — Farmers Home Administration, an agency of the U.S. Department of Agriculture responsible for farm and home loans in rural areas, low income loans and rural development loans for such things as conservation projects, rural water systems, etc.

F.I.P. — Forestry Incentives Program is a federal cost-sharing program administered by the A.S.C.S. Its purpose is to increase the productivity of privately owned, non-industrial woodlands by encouraging the owners to do Timber Stand Improvement (T.S.I.) and tree planting. Commercial forestlands that are capable of growing at least 50 cubic feet of wood fiber per acre per year are eligible for this assistance.

IDNR — Indiana Department of Natural Resources, the second largest department of state government, is responsible for the administration of all natural resource laws in the state and the administration of all state forests, state fish and wildlife areas, natural areas, state parks, reservoirs, state memorials and monuments, state museums and public access and fishing sites.

R.C. & D. — Resource, Conservation and Development, projects which are sponsored by the local Soil and Water Conservation Districts and local county governmental units and are now recommended to be a part of the Regional Planning Areas of the state. They are organized to carry out special projects which provide technical assistance for the enhancement of local environmental conditions. Funding is available from the federal government through the U.S. Department of Agriculture to cost-share on approved projects. The Soil Conservation Service has been assigned administrative responsibility.

S.C.S. — Soil Conservation Service, an agency of the U.S. Department of Agriculture responsible for supplying technical assistance to private landowners through Soil and Water Conservation Districts. The S.C.S. also administers P.L. 566 (the Small Watershed program) and the R.C. & D. Program as mentioned above.

S.W.C.D. — Soil and Water Conservation District, which is usually organized on a county basis in Indiana. The S.W.C.D. is a legal subdivision of state government organized and run by local landowners. Each district has a board of five supervisors. Three are elected by the cooperating landowners in the district. The other two are appointed by the state association of S.W.C.D.'s. A landowner can become a cooperator of a district by signing an agreement stating he or she will use and manage his or her land within its capabilities. In return for becoming a cooperator, the landowner receives free assistance in planning and installing conservation and erosion control measures. Technical assistance and various materials are provided by the Soil Conservation Service through the local S.W.C.D.

T.S.I. — Timber Stand Improvement. This refers to any cultural practice done in the forest stand that improves the rate of growth, quality of growth or composition of the forest stand itself. This includes, but is not limited to: pruning, non-commercial thinning, crop tree release, elimination of competing culls, elimination of competing vines, weeds and grasses. T.S.I. is an investment in the forest resource that enhances the intended benefits of that resource.

Section 208 — Part of the "Federal Water and Pollution Control Act," PL92-500. This gives a mandate to the states to develop and implement plans that will adequately control non-point sources of water pollution. Most agricultural and forestry management activities can contribute to non-point sources of pollution if improperly applied on the land.

PL-566 — Public Law 566, the federal law that brought into being the small watersheds program. This law enables people in a watershed of less than 250,000 acres to organize conservancy districts, develop plans to solve water and soil related problems within the watershed area and receive cost-sharing funds for activating the plans once they are approved. The conservancy district is a legal subdivision of state government with the power to levy property taxes on the land within the watershed boundaries. Monies so raised are used to purchase land, easements and rights-of-way, and for the maintenance of permanent structures.

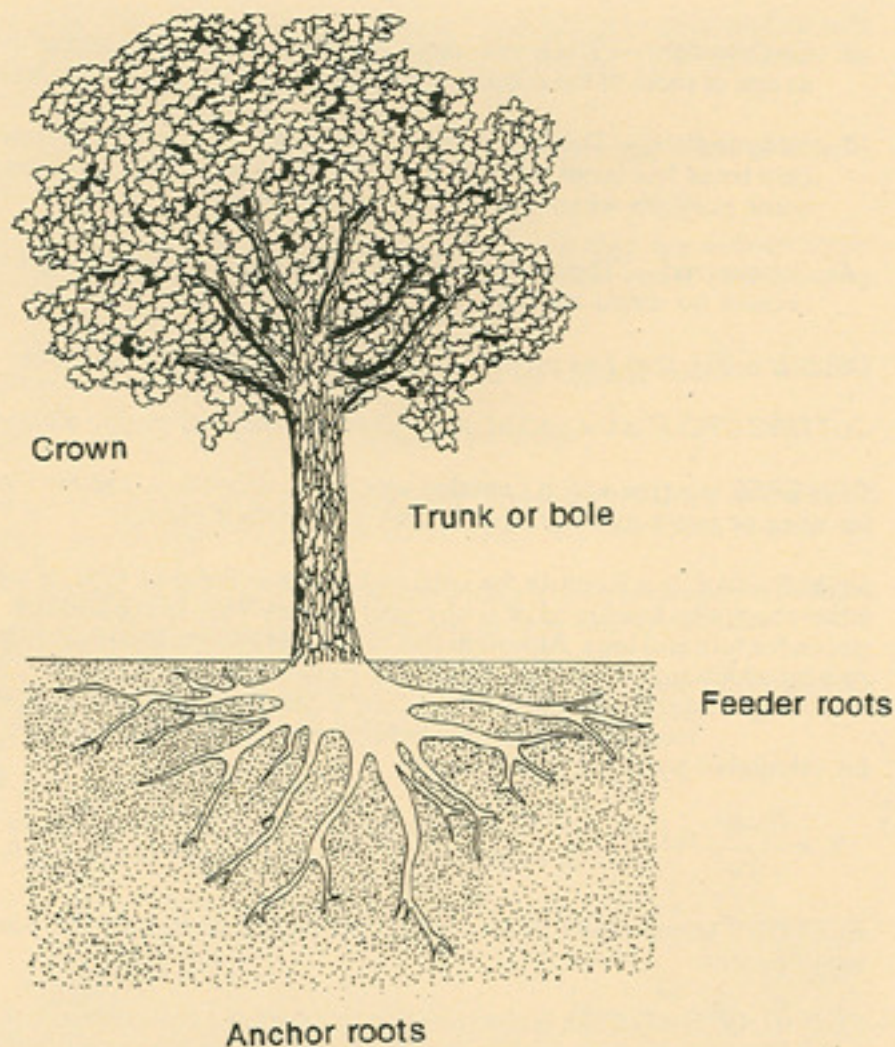
L.T.B. Bulletin — A monthly bulletin published by the Division of Forestry for the advertisement of public and private timber sales. The L.T.B. is sent to timber buyers who are licensed and bonded by the state of Indiana. This is done as a service to both the woodland owners and the wood-using industries.

PART III — DEFINITIONS OF COMMON FORESTRY TERMS

BASAL AREA is a measurement of stand density and is expressed in square feet per acre. It is measured by adding up the cross-sectional areas at breast height of all trees on an acre of ground.

BOARD FOOT is a unit of measure used to determine the volume of lumber and other wood products. It is defined as a piece of wood 12 inches long, 12 inches wide and 1 inch thick, or 144 cubic inches of wood.

BOLE is the trunk or main stem of the tree.



BROWSE as a verb: the act of an animal feeding on vegetation; as a noun: browse is vegetation available to deer and other forage feeders. It may consist of herbs, weeds, grasses, low shrubs, small trees and very low branches of larger trees.

CANOPY is the cover formed over the ground by a contiguous grouping of tree crowns at approximately the same height.

CONSERVATION is the wise use of our natural resources.

COOPERAGE is a term describing wooden containers such as barrels and kegs. There are two types of cooperage:

- (a) Tight cooperage refers to barrels and kegs designed to hold liquids.
- (b) Slack cooperage refers to barrels and kegs designed for packaging dry commodities (not watertight).

COVER refers to any type of vegetation which aid wildlife in concealment from predators.

LIVE CROWN is that part of the branch area of a tree which is living and has leaves or needles capable of carrying on photosynthesis.

CROWN DOMINANCE refers to the position of a living tree's crown in relationship to the living tree crowns that are adjacent to it. There are four basic crown positions:

1. **Dominant** — The tree's crown is above the surrounding tree crowns and able to receive full sunlight on all sides.

2. *Co-Dominant* — The tree's crown is in the upper canopy and at the same levels as one or more of the adjacent trees. The top of the crown receives full sunlight.
3. *Intermediate* — The tree's crown is below the level of two or more of the adjacent trees, but is not completely overtopped. The top of the crown can receive some sunlight when the sun is directly overhead.
4. *Suppressed* — The tree's crown is below most of the adjacent trees and can receive no direct sunlight.

CULL is a tree that has no commercial value and never will have.

CUTTING CYCLE is the period of time between harvest cuts in a woodlot or forest.

DEN TREE is a tree which contains one or more cavities that are used by wildlife for dens or nests in which to live and/or rear their young.

DOYLE RULE is a formula for calculating the volume of logs. It was devised by a merchant who lived in what is now upstate New York in the 1700s and who traded goods for furs and logs. Although this rule is not always accurate, it is the accepted rule by which timber is sold in Indiana. Because it underestimates the volume of small logs and overestimates large logs, it has helped to encourage some people to grow their trees to a larger size before selling. The Doyle volume of a log may be calculated by using this formula:

$$V = \frac{(D-4)^2}{16} (L) \quad \text{where "V" is the volume; "D" is the DIB of the log at the small end in inches; and "L" is the length of the log feet.}$$

ECOLOGY is the study of the relationships between animals, plants and their environment.

ECONOMIC MATURITY is that point in time when a tree or stand of trees reaches its maximum economic value, and if allowed to grow beyond that point in time will decline in growth rate, quality or both. Both growth rate and timber quality play a part in determining when economic maturity actually occurs. Example: A black oak tree growing on a poor site with no high quality material in it may be economically mature at 16 inches DBH, while a black walnut tree on a good site with a long veneer quality log might not reach economic maturity until it is 28 inches in DBH or larger.

ENVIRONMENT is all of a plant's or animal's physical surroundings and includes, but is not limited to, the air, soil, water and other living organisms.

FOREST is a plant association predominantly of trees and other woody vegetation.

GROWING STOCK are the good growing, healthy, straight-formed trees that will be kept in the stand to grow to economic maturity. The term "growing stock" is also referred to by foresters as "leave trees."

HABITAT is the area or type of environment where a particular plant or animal normally lives.

HARVEST STOCK are the trees ready to be cut because they are economically mature, badly damaged or of lesser value and should be removed to give growing room to other trees.

MAST is any type of fruit or nut produced by trees or shrubs and eaten by wildlife.

PRESERVATION is the non-use of our natural resources.

PRUNING is a part of timber stand improvement. Trees are trimmed and shaped to give the best form and most knot-free wood. There are two types of pruning:

1. *Corrective Pruning* — This is done to shape young trees and develop a straight, central bole while maintaining a maximum growth and crown size.
2. *Side Limb Pruning* — The trimming of side limbs on the lower portion of the bole to produce a log or logs of knot-free, high quality wood.



1. Wolf tree: short trunk, wide spreading crown

2. Den tree: used by cavity nesting animals

3. Canopy: "umbrella" of tree crowns over the forest floor

RELEASE is a type of timber stand improvement work that can be one of the following:

1. *Crop Tree Release* — means removing all undesirable competition for sunlight from selected trees so that these trees will grow unencumbered and develop into harvest trees in the shortest possible time. If the trees are less than 16 inches in DBH, one release will not sustain maximum growth to maturity and additional release work will have to be performed.
2. *Full Crown Release* — means removing all competition for sunlight from the crown of a tree. The degree of crown release is determined by the spacing left between the crown of the tree released and other crowns around it. The greater the spacing, the longer it will be before the crowns grow together and more release is needed.

RESOURCE is anything that is used by people.

NATURAL RESOURCE is anything that is used by people that is naturally present in the environment. This type of resource can be divided into two categories:

1. *Non-renewable* — Such as minerals and non-living resources that will not reproduce and grow, or will not naturally recycle.
2. *Renewable* — Such as plants and animals that are living, growing, reproducing or naturally recycling resources.

ROTATION is the period of time it takes to grow a stand of trees to economic maturity.

SAWLOG is a log at least 9 inches in diameter inside the bark at the small end of the log, and usually ranging in length from 8 to 16 feet.

SHADE-TOLERANCE is the ability of a plant to remain in the shade of other plants and still maintain a level of metabolism that will sustain the plant's life. Most of Indiana's high valued species are intolerant to shade. Such species as tulip, black walnut, red and white oak, sycamore, cottonwood, black cherry, pin oak and sweetgum are all intolerant to shade.

SHRUB is a woody, perennial plant that does not attain the height or DBH of a tree.

SILVICULTURE is the science of producing and caring for a forest or woodlot by applying the principles of forest management within a sound economic framework.

SITE INDEX measures the quality of an area for growing trees. Site index is expressed as the average total height a species of tree can grow on the area in 50 years. Example: The site index for tulip tree on an Alford silt loam soil with no erosion is 90 to 105, and for upland oaks on the same soil type is 85 to 90. This means the average tulip tree should be 90 to 105 feet tall in 50 years of growth and the average black, red or white oak should be 85 to 90 feet tall in the same period of time.

STAND DENSITY is an expression of the total stocking of a stand of trees and is measured in square feet of basal area per acre.

STAND STOCKING expresses the actual make-up of the stand of trees and is measured in trees per acre (usually broken down by DBH classes).

STAND STRUCTURE is the arrangement of trees in the stand by age.

STAND TABLE is a table of numbers expressing volumes of timber by size classes and species. The unit of volume is usually the board foot, but cords, cubic feet, cord feet, or the weight of wood could be used.

STAND TYPE defines an area of forestland which exhibits similar physical and vegetative characteristics. Such characteristics as forest type, age, size, structure, site class, slope position, aspect, etc.

STAVE is a narrow strip of wood forming part of the sides of a barrel or keg.

THINNING is the reduction in density of stocking by harvesting or deadening trees to prevent overcrowding and stagnation of a stand of trees.

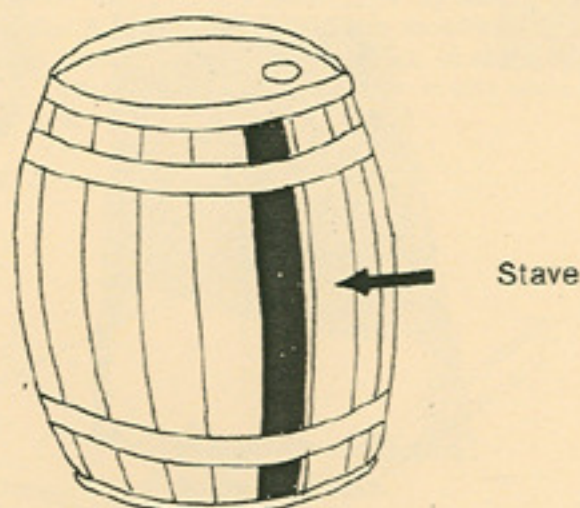
Commercial Thinning — is the reduction in stocking by harvesting trees to be removed for sale or for use.

Non-Commercial Thinning — is a part of timber stand improvement work to reduce the stocking by deadening or by cutting, but where no saleable product can be salvaged from the trees to be removed.

TIMBER MANAGEMENT is the manipulation of the forest resource to grow higher quality trees in a shorter period of time on a continual basis. In order to manage a forest you must know what is available (the inventory), how fast it is growing and what the maximum potential for growth is on the site.

You must reinventory your resources periodically and readjust your goals according to the new data. Your plan of action must be flexible enough to allow for changes in growth rates and natural disasters.

Most forest managers find that growth rates increase when management practices are applied. The highest overall growth rates for any stand on moderate to good sites over the entire rotation period can only be obtained through even-aged management.

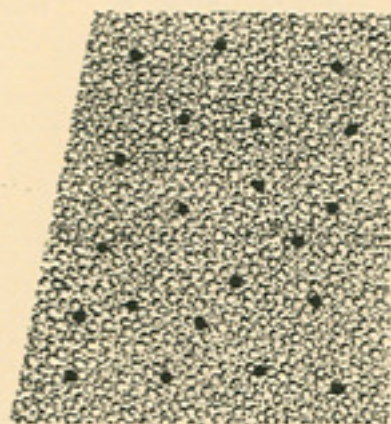


Natural stands and managed stands have distinctive stand structures identified as *even-aged*, *two-aged* and *uneven-aged*. These classifications are based on age distribution and area.

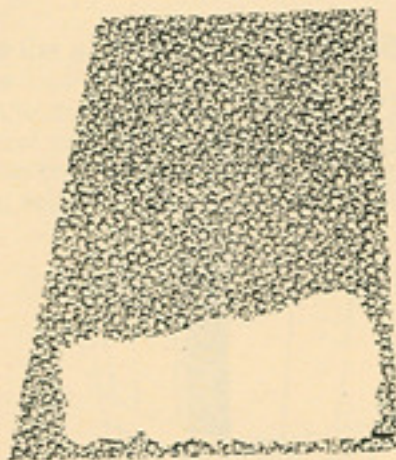
Even-aged Stand is a stand of trees that are all about the same age on a given area. There are three silvicultural schemes that can be used to create even-aged stands.

1. *Shelterwood* — Approximately half to three-fourths of the stand is cut, allowing much more sunlight to penetrate through the upper canopy. This encourages sprouts, advanced regeneration and new seedlings to grow. After the lower story is fully stocked, the remainder of the old overstory is removed. This favors intermediately shade tolerant and shade intolerant species to regenerate and develop. Damage done by a second cut could be a drawback. An alternative is to remove the sheltering overstory, in two or more cuts, giving more time for tolerant and intermediately tolerant species to develop advance regeneration.
2. *Seed Tree* — All trees are cut with the exception of approximately one to two trees per acre left for seed. This favors shade intolerant species. Seed trees can be harvested when the new stand is fully stocked. If you have a second cut, the seed trees will probably be lost to natural causes, or removed in T.S.I. work.
3. *Clearcutting* — The whole stand is cut and the area regenerated. Sustained yield is possible by area control. This favors shade intolerant species.

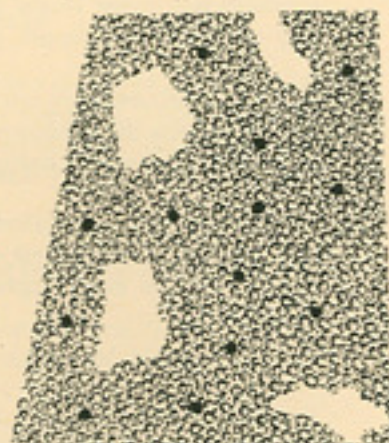
Regardless of the regeneration method applied, the stocking of even-aged stands is maintained during the growing cycle by T.S.I. and/or intermediate cuttings.



single tree



clearcut method



group selection combined
with single tree cutting

Two-aged Stand is a stand which has two distinct size classes intermixed:

1. An overstory of larger trees, usually pole-size (7" to 12" DBH) or larger, that are definitely dominant and taller than the understory.
2. An understory of small trees that are usually in a suppressed crown position beneath the overstory trees and never in a better crown position than co-dominant when there is an opening in the overstory.

Uneven-aged Stand is a stand in which three or more distinct age classes are maintained on a given area. An uneven-aged stand is achieved by a combination of intermediate cutting and regeneration harvests.

1. *Intermediate Cuttings* — Treatments conducted to modify or guide the development of an existing crop of trees, and not primarily for regeneration.
2. *Single Tree Selection* — Individual trees are harvested to provide sufficient area and light for new regeneration.
3. *Group Selection* — Openings are created in the stand for new regeneration by removing groups of trees. Size of opening will vary with area being managed (usually $\frac{1}{2}$ to 5 acres).
4. *Diameter Limit Cutting* — All trees above a minimum diameter are cut down. This eventually causes a loss of stand vigor because the fastest growing trees are taken first, leaving small, slower growing trees of tolerant species to occupy the growing site.

This method of cutting is defined because much of Indiana's forestland has been managed unintentionally in this manner. It is unacceptable because it causes stagnation of the stand and irregular harvests over excessively long cutting cycles.

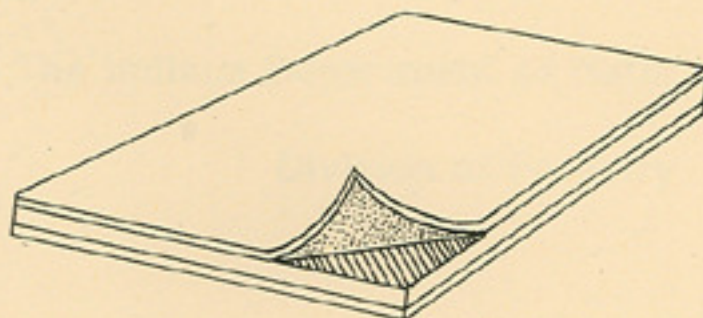
TREE is a woody, perennial plant which attains the height of 20 feet or higher and a DBH of 4 inches or larger and tends to have a single, central bole.

VENEER refers to thin sheets of wood ($\frac{1}{32}$ " to $\frac{1}{64}$ ") sliced from a sawlog of exceptional quality. Veneer is used in plywood manufacturing and as a surface layer application over wood of lesser quality.

WATERSHED is any given area of land which drains or sheds water to the same point. This can be an area of less than an acre, such as one very small ravine draining into a larger ravine, or it can cover millions of acres such as the Mississippi River Basin.

WOLF TREE is a tree that occupies too much growing space for the amount of merchantable volume that it is growing. These are usually large-crowned, short-boled trees that developed in an opening, old field site, or at the edge of the forest where it had little or no competition from other tree crowns while it was developing into a sawlog-size tree.

WOODLOT is a small forest.



Veneer